DCIT 415

Assignment 5

In-Depth Reviews of Five Articles in Software Engineering

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1. "A systematic review on trends in using Moodle for teaching and learning" by Gamage et al. (2022): Gamage and colleagues' research provides a pivotal synthesis of studies on Moodle's application in online teaching, especially in STEM education. This systematic review collates research to assist educators, researchers, and software developers in understanding Moodle's adoption, identifying trends, gaps, and innovative methods for improving online teaching and learning. The study's methodical approach, utilizing bibliometric and thematic analysis, reveals Moodle's primary use in university STEM disciplines and its role in enhancing student engagement and performance. The research highlights the need for qualitative exploration from educators' perspectives and the extension of Moodle's application beyond STEM disciplines, paving the way for future research in this area.

2. "Agile trends in Chinese global software development industry: Fuzzy AHP based conceptual mapping" by Khan et al. (2021):

This study offers a significant exploration into the adoption of agile methodologies in the context of Global Software Development (GSD) in China. It adeptly identifies and categorizes influential factors for effectively scaling agile practices in this specific industry, utilizing a methodical approach that combines literature review and industrial study, further enhanced by the Fuzzy Analytic Hierarchy Process (AHP). The study's findings, which outline 23 success factors across four distinct categories, are pivotal for practitioners, educators, and researchers seeking to navigate the complexities of agile scaling in the culturally and geographically diverse Chinese software industry. The research underscores the necessity for empirical validation of these findings, particularly through practitioner surveys, indicating a substantial avenue for future scholarly exploration.

3. "Trends and trajectories in the software industry: Implications for the future of work" (Information Systems Frontiers, 2023):

This article delves into the evolving landscape of the software industry, examining contemporary technological advancements and their impact on software development work. Through expert interviews analyzed within the framework of cultural lag theory, the study reveals four pivotal shifts shaping the future of software development: scalability, data emphasis, convergence of IT and non-IT sectors, and the dominance of cloud computing. The findings are crucial for both practitioners and academics, providing insights into the ongoing and future transformations in the industry. The study emphasizes the

ongoing need for research to stay abreast of technological advancements, highlighting the dynamic interplay between technological evolution and practical application in the software industry.

4. "Software engineering for AI-based systems: A survey" (ACM Transactions on Software Engineering and Methodology, 2022): In this comprehensive survey, the intricacies of software engineering (SE) for AI-based systems are thoroughly examined. The study uniquely synthesizes knowledge from a decade of literature, addressing the emerging field of SE for AI-based systems. The systematic mapping study unveils an escalating interest in the field post-2015, particularly focusing on dependability and safety. However, a notable finding is the lack of discussion on threats to validity in empirical studies, raising concerns about the robustness of the research in this domain. The paper serves as a clarion call for more rigorous research methodologies and underscores the importance of continuous updates in this rapidly evolving field.

5. "Predictive Models in Software Engineering: Challenges and Opportunities" by Yang et al. (2022):

Yang and colleagues' article systematically organizes the vast body of knowledge on predictive models in software engineering. By analyzing 421 papers spanning over a decade, the study categorizes the primary studies, delineating key trends, and contributions. The prevalence of papers in high-quality journals and conferences underlines the significance of predictive models in the field. The paper's analysis reveals an inclination towards novel predictive model techniques and methodologies, alongside a focus on empirical studies and case studies. The study also details commonly used evaluation metrics, providing a comprehensive overview of the state-of-the-art in predictive model application in SE. Looking forward, the study posits a roadmap for addressing current challenges and opportunities in predictive models, marking a substantial contribution to the field.

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